VOL. XXX APRIL, 1920 NO. 2

THE MONIST

PHILIP EDWARD BERTRAND JOURDAIN.

THIS journal has suffered another great loss in the death, on October 1, 1919, of Mr. P. E. B. Jourdain, M.A., who has been the English Editor of *The Monist* since 1912. Following so soon on the death of Dr. Paul Carus this loss is especially felt. Certain aspects of Mr. Jourdain's work will be familiar to all our readers; but his genial personality, the extraordinary breadth of his interests, and the humorous kindliness which endeared him to all his friends, it is more difficult to convey to those who had not the good fortune of his personal acquaintance. It will, however, be our duty in this notice to try to give some impression, slight and incomplete though it may be, of the man himself and of his work.

Mr. Jourdain was born on October 16, 1879, and comes of a distinguished family possessing, as the name implies, French antecedents. He was the youngest son of the late Rev. F. Jourdain, Vicar of Ashbourne, Derbyshire. Even before he went to school he showed that characteristic interest in the strictly logical interpretation of ordinary speech which was the foundation of his mature wit; and in his school-days at Cheltenham College he soon developed the combined interest in mathematics and science which was to decide the main trend of his thought. I have been privileged to see the exceedingly interesting memories of these earlier years which have been so charmingly set down

by his youngest sister Milly. These memories not only picture with evident truth the characteristics which were to make the man, but also possess in themselves intrinsic value. With Miss Jourdain's permission certain parts of them are here given.

Among the cold, green Derbyshire hills the river Dove flows swiftly through its dales—valleys of steep, grass-grown hills and sharp, gray limestone rock. Sometimes masses of bushes and small trees grow near the water; the cold mist blows there in the winter, and even in the summer it is green and cool. When the river has left the dale it passes through tamer country, by flat fields and under old country bridges of graystone, till it comes to another exciting place, a rushing weir. The swiftness and noise with which the water slid down the weir-bank and into the green depths below had a great fascination for me, and yet I was so frightened of it; as if all the river's evil spirits were shouting and yet could not get free. About a mile from this river, in a gabled graystone house on a hill overlooking the market-town which lay along the next valley, Philip and I were born and lived for more than our childhood. Water was always so important to me, and to him too I think, so that we could hardly rest till we had seen the river or the sea in any new place, as if any water had a living connection with our river.

The garden, which was on the hillside all round the house, was of course the most friendly and familiar place to us both. I do not know if an outsider would have found it so interesting: there were stretches of rough grass—set for hay in the Spring—with pines, and yews, and deodars planted here and there; a sloping mown lawn in front of the house, a big kitchen garden at the back, and by the side a friendly bit of mixed wood where there was a swing and piles of wood and fowl-houses. It was here that we used to build huts round the trunks of trees with branches pulled from the piles. Philip told me one day that he had found some planks left over from building a wood-shed, so we went there when the gardener was out of the way and silently carried them off to our hut-making place. We pretended we were travelers shipwrecked on a tropical island, and this game lasted through many summer holidays —we hunted wild beasts on half-tamed zebras, and when the dinner

bell rang and we ran indoors we sat at the table breathless and quiet, anxiously waiting for the moment when we could rush off and Real Life begin again. At the bottom of all was a tennis lawn, a flat mown place like a lake among the rough grass banks with evergreens dotted about them.

We both had our own gardens up at the back of the house. They were in a shady place, especially mine, and nothing much grew there but two stick-like plum-trees, grown from stones, and some lung-wort. Philip's was in rather a better position, but he took no interest at all in any plant, so here again there were patches of lung-wort. We used it as a graveyard for any stray dead animals, such as ducklings and mice. There was still a space in his garden, and he suggested that we should dig till we came to the middle of the earth and see if it was burning hot. So we dug down about a foot; then I got in and said excitedly that I could *feel* it getting warm, but when Philip got in he felt no difference, and our enthusiasm for digging soon failed.

Later on we had better gardens near the front of the house, where there was more sun and the ground seemed better. We both liked the gardener, though he found Philip's wits rather too sharp to live with comfortably; but once I remember William got the best of an argument. William was a misogynist and Philip said: "But William, if people didn't marry, there'd be no children."

"There's enough children to last *our* time, Master Phil," said William and went on digging.

If we went down the field-path and through the churchyard we came to the road over the stone bridge. This was where I liked to run on in front and hang over the side, watching the muddy stream below until whoever was with me came up. Then we passed the little, wooden toy-shop, a lovely place full of cheap toys, dogs and common dolls, wooden horses with cylindrical bodies and many penny toys, fascinating to look at even if you had no money to spend. The old man who kept this shop had a long, gray beard, and a black velvet skull cap—enough to make me think him a magican. He was a clever old man, much interested in photography and a friend of Philip's. When Philip went into the little room behind the shop —where there was a skylight and a big stand-camera and artificial backgrounds for taking portraits—to talk to the old man, I would have a thorough inspection of the toys. This was the only shop before we came to the station—a delightful place to explore with

Philip. I used to follow Philip into the signal-box and even on to an engine and listen to his friendly technical talk without understanding a word; but it was enough to feel how popular he was and to see the grizzled old engine-driver looking at him with much affection. There was a great stone shed where the railway lines went into the darkness; engines went in there like tired animals after the day's work was done, and I thought they must have a jolly time in their house.

The beginning of the town was fine, the huge church with much ground round it, so that no other building could come too near, stood facing the wide street; the gray Elizabethan grammar-school on one side, a raised, cobbled pavement in front of it, and on the other side solid dwelling-houses, in one of which Dr. Johnston used to stay. There was a wonderful feeling of brightness in the light here, perhaps because I always think of it on a fine day—and the inside of the church always seemed to me brighter than any other church. The street grew narrower as we went on and the shops crowded together, but there were curious old bits—the queer cobbled way up the hill to the market, and the sign of the inn stretching like an arch across the road with a Turk's head on the top and the picture of a sportsman in a green coat hanging below.

At the end of this long street there was a big house with grass laid round it, old enough to be haunted but not otherwise interesting. Philip and I once stayed here, and though we saw no ghost I was much afraid at night, for my room was on a higher floor than his and the people all seemed grown-up and remote. I had a bath in my room at night and I dragged it up behind me for protection when I knelt to say my prayers, thinking that the ghost might at least fall in the water first.

It was September just before Philip went back to school, and every morning we could go through the shrubbery to the big pond where the early mist lay thick and watch the wild ducks down on the still gray water. When the sun had dried the soaking grass we wandered about freely and boldly explored the haunted avenue in the daylight and then went on to see the farm.

Most of my knowledge of that country was taken from the point of view of the road and the hedges; for when a child is small there are so few chances of seeing above the hedge line. The land by the river, which lay behind our house, I knew well, for there was no road and we always went through the fields. I love to remember

the lie of the land there, and how the pleasant low hills rose beyond the flat, green fields on the far side of the river; the sun is always shining there, glinting on the water and on the white stones where Philip and I tried to wade across. When I was at school and Philip at home reading, he used to follow the hounds over the misty hills in the winter and was often out all day. He used to tell me how he would leave home in the early dark and walk miles to the meet, and how once he was lost and walked over great stretches of new country till he came to a shepherd's cottage, where they gave him tea and offered him a sheep-dog puppy and showed him the way home. He told me how good it was to take one's boots off and eat and then read by the fire.

As I first remember Philip he was a little brown-haired boy in a dark-colored sailor-suit, slightly built, with a great look of intelligence and an open, pleasant expression, but also an air of delicacy; and sometimes his whole face was clouded with nervousness and even his shining gray eyes looked frightened and his mouth irritable.

He was always more ready to use his brain than his hands and feet, for even quite early he was slightly clumsy and easily thrown off his balance. He was quite aware of this and it made him irritably ready to tease even his elders, for he knew it was the only weapon he could successfully use. He was timid and avoided danger if he could, but if it was there and unavoidable he behaved with courage and coolness.

He was sociable and talkative and never shy. He was fond of drawing, chiefly battle pictures, with quick and lively effect, but he never seemed to spend much time or trouble over them. When he went away to school he began to learn to play the piano, but he never was clever with his fingers, and he was more interested in the kind of brain-work which he did so well. But he became passionately fond of listening to music. When quite little he would lie under the pianoforte with me when it was played, and when a schoolboy I remember his serious face when listening to the fine organ after church.

My father was devoted to Philip, and I well remember, when some stranger was present, he would place his hands on Philip's shoulders and, looking immensely tall, would say with loving pride, "My son, Philip."

When we were still quite young and slept in the same room, we generally told each other stories, but sometimes had a game

Philip had invented. He would say, "Let's play who can name the highest number." Then one would name a number such as three, and the other would say "Ten," and so on. When we came to a thousand I began to get nervous, for I always got muddled among big figures and could not remember which was the bigger—a million or a billion. One night he called out, "I name a number higher than whatever number you name." I turned this over and over and then said, "Well, I name one higher than that." "You can't, you can't," sang Philip, self-satisfaction shining all over his face, "I've won, I've won."

"But Philip," I said, nearly crying with exasperation, "you haven't won, *I said one higher than that.*"

"And mine is always the higher."

So then I sulkily pretended to sleep.

Another time, I was lying awake rather troubled by a housemaid's idea of heaven—living for ever and ever in a white gown and singing hymns. I called out, "Phil, can things go on for ever and ever and never have an end?" He said promptly, "A circle has no end," and I hoped I should not die.

He was fond of setting small logical traps for me. For instance, once he said, "All people tell lies once in their lives, don't they?"

"I s'pose so."

"Then," he said triumphantly, "Mater has told a lie!"

"No she hasn't!" I said indignantly.

"But can't you see that it must follow?"

No answer.

The presence of most strangers, preferably grown-up, generally had a great effect on Philip. He knew he had much power of charm and clever talk, and was keenly aware of his lack of physical power. When we went to children's dances, he always went unwillingly and was obviously bored all the time, unless he could get some one to sit out with him.

When Philip first went to school he was fairly happy, I think, though he always minded the actual leaving home. I remember a day or so after he had first gone, my father came into the room where my mother and I were sitting and said he had just heard from B. (the headmaster) that Philip fell on his feet at once. Sometimes my mother and I went with him in the train to the next station—a mile off—and then walked home: once I remember his misery growing and growing during the journey till he burst into

tears when he said good-bye to my mother, and then I saw his crying face at the window of the train until it all quickly disappeared.

Some of my happiest days were spent staying with Philip out of term, at my sister's schoolhouse where I was to go later. The house was big, and we thought it luxurious, for there was a bathroom, and thick carpets in the bedrooms. What most pleased me on the first night was to find not only a candle by my bed, but a box of matches which I could strike in the night—and did.

There was a fair-sized town, with modern villas edging the flat roads and stretching far into the country. Here we had a mail-cart and he used to push me in it for miles; for, without saying anything to each other, we both knew that I found in difficult to walk as far as he could, and he found it steadied him to push me and made it easier for him to run.

One day we were coming along a road where there was nothing in sight but an old woman with a big basket of washing. Philip said, "Shall we give her basket a lift?" So we stopped, and I got out and we hoisted the basket on while the old woman thanked us: we took it as far as she wanted, and the old woman covered us with blessings while my brother swept off his cap and we ran away.

Later, when he went to a public school, he was obviously not happy, though he never told me so; he always seemed glad to throw off the school atmosphere and come back to our old life in the room we still called the nursery. There was often a strained, protesting look on his face as if he was remembering. But he did well in his work and brought back many prizes, a keen interest in chemistry and electricity, and many bottles and batteries. The nursery shelves were now filled with chemicals, and my animals had to leave plenty of room on the chest of drawers for retorts and induction coils. He taught me with great clearness some elementary chemistry (which I had to write down in a book) and also the use of all the apparatus.

I suppose most clever people when they have learnt or discovered something wish to explain it to some one else; Philip had this wish strongly and explained things well even when a small boy. At first he was too eager to be patient with a sister, but he grew more and more so. Any one who knew him when he was grown up would know that he was always ready to explain with extraordinary patience. I remember when he was eight years old, and began to learn Latin at a day-school, he used to teach me Latin declensions

in bed before breakfast, his eager little figure in its Jaeger night-shirt and pink face all alight with enthusiasm. I was not at all a willing learner, being simply bored with such early lessons, and I found it no more interesting than the multiplication tables which were just then worrying me.

The electricity I was content to take as a mystery and learn rather like a parrot. When he was arranging some bottles he said: "Always throw away the stuff in any unlabeled bottles."

"But if you're *sure* you know what's inside?"

"You *can't* be sure unless you have a proof like a label."

"But if—"

"O shut up," he snapped, "you must always throw it away."

I loved touching the thin-necked flasks and test-tubes and helping to make experiments. He rarely allowed me to pour out acids; we had three bottles of them, hydrochloric, sulphuric and nitric, and he gave wicked personalities to them, so that I used to stand and look at the queer, thick liquids as if they were really devils that were kept in those stoppered bottles.

Philip had many catalogs from chemical manufacturers, and we used to pore over these and make lists of what we would buy if we had five or ten shillings to spend.

About two years afterward we again stayed at the schoolhouse out of term, but now I was really part of it; also there were two girls staying there for the holidays whose parents were abroad. Before Philip came I had talked so much about him, that when he really did come I was a little nervous as to whether he would come up to the high standard of brilliance I had set for him. But all went well; the girls admired his jokes and talk and looks.

We four went up to London to the Zoo one day; this was the place Philip and I liked beyond any other in London, and the girls came because we wanted them so much. Philip enjoyed it as much as I did, but much more sensibly; he talked to the keepers, who seemed to like him as much as the engine-drivers always did.

When he left school I was still at mine, and he used to send me wonderful "magazines" written and illustrated by himself on a sheet of note-paper, telling me all the small news of our home. There were often photographs of animals "given away as a supplement to the number," for chemistry had now grown into an interest in photography.[1] He was very thorough about all the details of

[1] This interest is reflected in Mr. Jourdain's first papers, published while he was still an undergraduate, on "Colour Photography."

developing, and was much more particular about washing a plate than about washing his own hands, and tried hard to make me so.

This thoroughness in his work never left him. And though he had enthusiasms, for toys when he was little and for people when he grew bigger, which rapidly cooled, yet his enthusiasm for scientific work never did; and he made me feel, even when we were only school-children, its undying importance.

After our father died, we went to live in a little house at Cambridge so that Philip could live with us and go to college. I was still at school but saw him in the holidays, looking so fine, I thought, in his dark blue gown, and happy as long as his College library was open; I used to feel nearly bursting with pride as I helped him on with his gown and stroked its shining folds. He took me to see this library, and showed me where he worked in a huge underground room. He got me botanical books and left me; when it was time to go, I heard his rather quick, uncertain step on the stone floor as he came to my table. He gave me his arm and we went out together up the stairs, along the echoing cloisters and down the rounded stone steps from the dining-hall where there was nothing to hold on to; there was a horrid, breathless minute and then we were safe on the pavement, the Great Court stretching far round us in all its ancient quietness, so that buildings which lay along its sides looked small till we came up to them.

I left school at Easter and came home, so that now I could see him in the term time when he was much busier, often hurrying to lectures, his face looking strained with too much walking. But he looked so happy when he spoke of the jokes and tales in other men's rooms. I got to know them all by name and the different places where they "kept."

I suppose most undergraduates do not tell their mother and sister more than they can help, but Philip was so happy in the bit of life he had got, though he must have felt how incomplete it was, that he simply overflowed to us.

Sometimes he would give tea-parties himself in our dining-room, and I could hear his friends, through the bathroom window, singing the song of how the animals went into the ark and how the Englishman

> "Was marr-i-ed
> To a mer-ma-id
> At the bottom of the deep blue sea."

to the tune of "Rule Britannia."

Our old nurse Rebecca had married an elderly gardener with a grave whiskered face. He worked at a nursery near, but when he was free I delighted in showing them both round the Colleges, the library where Philip worked and so on. But what old Frank most admired was one of the evergreen trees in the grounds of St. John's: he stood, his head thrown back and his hands clasped behind his lean back, and said, "I never *see* such a Wellingtonia." The next best things were the bright-colored geraniums in the window-boxes of the gray old Great Court.

In July I went abroad to a hospital in Heidelberg for a cure, and in September Philip and my mother followed, for there seemed some hope.

When he came into the hospital a little later, we had a pleasant life; we had meals in my room because it had two windows, and sometimes he would tell me about his work; he said with enthusiasm that he was going to write a *Geschichte der Mathematik* as he called it, for he always liked using foreign words. We had what was to be nearly our last bit of walking together here.

Philip often wrote ridiculous verses on small incidents which happened at the hospital. I copied them all out and gave them to the Doctor when he came to see me in the mornings, and he was so absorbed with merriment that he sometimes nearly forgot to stop the electric current. He once said to me that he always supposed that I also was partly author, and I afterward told Philip that that was the hardest thing I had ever had to deny. He also wrote a long ballad, in English, called "Les Voyages de M. R."—about the imaginary travels of that old man in search of health. This was the first verse:

"Herr R. has traveled far and wide
For treatment of his back,
But then I greatly fear that he's
A hypochondriac."

I saw them sitting side by side on the sofa when Philip, with flushed face and many gesticulations, translated this freely into French and Herr R. with his sad, yellow face and dusty, black figure, listened with great attention. To our surprise he liked it, and would repeat the end in a wonderful accent—

"He dotes on el-ec-tric-i-ty
And loves to be suspended."

Soon afterward we returned to England. But we now had a fine memory between us of a queer, foreign, exciting life which was kept alive a good deal by Philip's imitations of our acquaintances there. He was always a wonderful actor and would throw his whole mind and body into his roles.

It is quite evident that there was a strong and lasting bond of sympathy between the writer of these memories of childhood and youth, and her brother Philip. The fact that both early developed symptoms of the progressive paralytic condition known as Friedreich's ataxia may have served to strengthen this bond. The visit to Germany for treatment mentioned above—with its consequent break into Mr. Jourdain's academic career—was not however wholly lost; for he returned from his travels a fluent and scholarly linguist. Moreover his growing physical disabilities failed to have the effect they would have produced on a man of less caliber. The amazing output of first-rate original work in the next few years bears witness to this. The following account, which does not claim to be exhaustive, will give the reader some idea of this early activity. In 1902 and 1903 he was at work on an important paper (published later in 1905, in *Journ. für Math.*) on the general theory of functions in which he showed that not only function but also continuous function could be conceived in a purely ordinal manner. In 1903 appeared "A General Theorem on the Transfinite Numbers of Aggregates of Functions" in *Phil. Mag.* In 1904 two further papers on similar subjects in *Phil. Mag.*; papers in *Mess. of Math.*; and the first of a series of papers in the *Quart. Journ. of Math.* on the general equations of mechanics. In 1905 appeared original papers in *Phil. Mag., Math. Ann., Journ. für Math., Mess. of Math.*; together with the thesis for which he had been awarded the Smith's Prize and which was printed in Crelle's *Journ. für Math.* In 1906 Mr. Jourdain was elected to a university scholarship—the Allen—being the

first I believe to hold it for pure mathematical work. Enough has been said of the work of these years, 1902-1905, to show that it was a time of immense activity and fruitfulness. They were, moreover, followed by many years of equal productivity. Only an indomitable will to rise above all physical drawbacks could have enabled him, by steady work, to produce so long and so valuable a series of contributions to knowledge. In giving a true picture of the man and his work it has been necessary to speak of those drawbacks, and to refer to the partial paralysis from which he was destined to suffer throughout the rest of his life. But to all who came into personal contact with him his physical disabilities at once faded into complete insignificance in face of the obvious greatness of the man himself. His overflowing mental energy and his frank and generous spirit overshadowed everything else and combined to impress upon all who met him that they were in the presence of one of the most stimulating men of his time.

Based on his early work, and developing along the two main lines of interest which appear in it—namely, the theory of aggregates and analytical mechanics—were a large number of papers between 1906 and 1913. But the two lines of interest were not isolated from each other; they reacted reciprocally. Thus in the first article he wrote for *The Monist* ("On some Points in the Foundations of Mathematical Physics," 1908, XVIII, p. 217) Mr. Jourdain attempted the exact formulation of certain fundamental conceptions of mathematical physics, such as causality, by the application of results he had reached in the mathematical theory of aggregates. This article, moreover, shows the beginnings of that keen interest in the logical and philosophical foundations of science which characterizes all his later work. Of the technical papers on mathematical subjects which fall in this period special reference should be made to the long series of articles on "The De-

velopment of the Mathematical Theory of Transfinite Numbers" which began in the *Archiv der Math. und Physik* for 1906 and continued to 1912. This series forms a complete and scholarly history of the whole subject and is well worthy of translation and re-publication. Another noteworthy set of papers is the series in the *Quart. Journ. of Math.* on "The Development of the Theories of Mathematical Logic and the Principles of Mathematics." Of these the 1910 paper deals with the logical work of Leibniz and Boole; the 1912, with the work of MacColl, Frege and Peano; and the 1913, with Jevons. These two series of historical papers, together with the historical one ("Fourier's Influence on the Conceptions of Mathematics") of the three papers which he read at the International Congress of Mathematicians at Cambridge in 1912, exemplify Mr. Jourdain's growing concern with the history of mathematical ideas.

It is necessary to turn aside for a moment at this point in order to make it perfectly clear that this historical aspect of Mr. Jourdain's work did not involve any falling away into psychological logic. His belief in the objective nature of the world of universals studied in mathematics and logic remained unshaken. This is obvious from his humorous castigation, in his last book—*The Philosophy of Mr. B*rtr*nd R*ss*ll,* 1918—of the psychological logicians. Speaking ironically of them he says (p. 88), "I sometimes feel inclined to apply the historical method to the multiplication table. I should make a statistical inquiry among school-children, before their pristine wisdom has been biased by teachers. I should put down their answers as to what 6 times 9 amounts to, I should work out the average of their answers to six places of decimals, and should then decide that, at the present stage of human development this average is the value of 6 times 9." Yet, holding as he did that "history is irrelevant to logic, that the truth or falsity of

a proposition is independent of the way in which so-and-so discovered it," he could still recognize that the world of universals in all its clear-cut immutability is only reached by a long *process* which is not wholly logical. The distinction which he made between the process by which we reach the final logical objective and that objective itself enabled him without inconsistency to sympathize with Poincaré's insistence on the synthetic and intuitional mode by which mathematical discovery advances, and yet to dispute that writer's claim that the final result is tainted by its psychological origins. In his last paper, on which he was engaged when he died, Mr. Jourdain gave an admirably clear account of the importance and true place of the historical process of discovery. "Nowadays," he wrote, "we can see clearly that the subject-matter of what we call 'logic' and 'mathematics' is a set of primitive ideas (or ideas which are incapable of further analysis) and deductive relations (which enable conclusions to be drawn without any appeal to experience) between these ideas. For the purpose of description in a way which shall economize the labor of thought as much as possible, we arrive at 'concepts,' which might be described as definitions of complex ideas and relations. Certain of these concepts were early perceived more or less vaguely. The vague images formed of the concepts by various people may be called 'ideoids.'" The distinction which Mr. Jourdain here draws is the same as that made between a "concept" and a "conception" in his paper "The Function of Symbolism in Mathematical Logic" (*Scientia,* 1917, XXI, p. 4). But it is, he suggests, less ambiguous to retain "conception" for its common usage as meaning the *formation* of what he now calls "ideoids." He continues, "The chief problem of the history of science seems to be that of describing as nearly as possible the various ideoids that have appeared from time to time." It is difficult to know when the psycho-

logical impurities—which, mixed with concepts, give the alloys called ideoids—are completely removed. And that is why the history of a science is of use even to the logician. Nevertheless, we must not forget that the impurity is different in nature from the pure stuff of concepts. "Concepts," he urges, "are not *formed* by people, but *discovered* by them." "On the other hand, ideoids are so formed; because they are just the vague notions that people form of concepts. Most people have a vague feeling of important concepts.... In any historical view we should try to give greater distinctness to the vague notions which nearly everybody possesses; and this problem, which is not unlike that of the poet who seeks to give expression to the ideas held obscurely by a large number of those of his own country, is of importance at the present time, because examples of the discovery of concepts which lurk in ideoids is a constantly recurring problem of science." The history of science may therefore be of use even to the logician and original worker; and is certainly of value to the teacher. It is as great a mistake, wrote Mr. Jourdain in *Mind* (1916, 25, p. 526), to "banish from teaching a discussion of the growth of ideas as it is to try to build a house without scaffolding on the ground that the scaffolding is not part of the building."

We must now return to the middle section of Mr. Jourdain's work, stretching roughly from 1906 to 1913, with which we were dealing. It was toward the end of this period, in 1912, that the late Dr. Paul Carus, while on a visit to the Congress mentioned above at Cambridge, met Mr. Jourdain and invited him to become the English Editor of *The Monist*. By this happy choice Dr. Carus was able to open up an extended sphere of influence for this Journal, and for the philosophical and scientific publications of the Open Court Publishing Company. A list of Mr. Jourdain's *Monist* articles is appended to this notice. It will be noted

that it was in this Journal that Mr. Jourdain published the series of papers on Newton which has made him the recognized authority in this field. Besides the editing of several volumes—including De Morgan's *Essays on the Life and Work of Newton,* Mach's *History and Root of the Principle of the Conservation of Energy,* Cantor's *Contributions to the Founding of the Theory of Transfinite Numbers,* and Boole's *Laws of Thought*—Mr. Jourdain also initiated the new series of Classics of Science and Philosophy. His translation of Mach's great work on *The Principles of the Theory of Heat* was completed just before his death. These labors stretched therefore over the remaining period of Mr. Jourdain's life from 1912 onward. But they by no means complete the tale of his work. He wrote, for example, a large number of encyclopedia articles, both of a technical and a popular nature. His little book on *The Nature of Mathematics* (first published 1912; new edition 1919) is a well-known and much appreciated example of his power to make abstruse subjects clear. He contributed articles on the historical and philosophical foundations of science to an exceptionally wide range of learned journals: to *Mind,* to *Scientia,* to *Isis,* to Dr. Singer's *Studies in the History and Method of Science,* to the Hastings' *Encyclopedia of Religion and Ethics,* and to the *Hibbert Journal.* In addition he felt it his duty to spare an immense amount of time from his own work to the thankless task of abstracting mathematical literature. This labor he gave cheerfully because he felt it to be an essential to mathematical progress; he therefore contributed abstracts to the *Jahrbuch* and to the *Revue Semestrielle.* In January, 1916, he began the series of well-known summaries of "Recent Advances in Mathematics" to *Science Progress* which was so valuable a feature of that journal. All who have made use of this part of Mr. Jourdain's work owe him a debt of gratitude. His encyclopedic knowledge of mathematical

literature, and his sense of the interconnectedness of the whole field, ensured its scholarly accuracy and completeness. Mr. Jourdain also contributed abstracts of current literature, to *Mind*, *The Monist* and *Isis*. He had also, at the time of his death, been for some years English Editor of the *International Journal of Ethics*.

It would, however, be a complete misconception of Mr. Jourdain's character if it were imagined from this record of his vigorous intellectual activity that he was merely a learned pedant wholly immersed in the things of the mind. He was, as well, a many-sided and lovable man, full of human kindliness and never-failing good humor. His intellectual interests, it is true, often directed his wit—which though caustic was always genial, and as refreshing as a cold bath—into logical channels. *The Philosophy of Mr. B*rtr*nd R*ss*ll* is full of clever and amusing illustrations of logical problems; and the article in *Mind*, "The Flying Arrow: An Anachronism," is an admirable example of his instructive fun. But in addition to these playful portions of his more serious labors Mr. Jourdain produced a great amount of the "literary work" which he stated to be his form of "recreation" in *Who's Who*. The boyish power of pointed and satirical versification which Miss Jourdain describes, found a natural outlet, when he went to Cambridge, in the ever exuberant field of university journalism. The contributions, both poetic and otherwise, of "P. J." to *The Granta* became at one time quite a feature of that journal. Perhaps his most successful series was that entitled "Some Unconscious Humorists of the Nineteenth Century." These included, among others, William Wordsworth, Mrs. Humphrey Ward, Thomas Carlyle, Sir Oliver Lodge and Miss Marie Corelli. These articles are not only extremely good fun, but also contain sufficient solid criticism to justify the hard knocks he so joyously delivers. Thus he quotes Carlyle's dictum "Not our Logical, Men-

surative Faculty, but our Imaginative is King over us, I might say, Priest and Prophet to lead us heavenward, or Magician and Wizard to lead us hellward." This he comments on as follows: "Carlyle's works read like too-literal translation of chaotic German, and, by this curious means, he succeeded not only in partly disguising the feebleness of his arguments, but also in concealing from the superficial reader the fact that his platitudinous-sounding opinions are, as a rule, composed of equal parts of truism and fallacy. . . . If our logical faculty is different from our mensurative faculty, it is ungrammatical to put 'is King' as a statement made about these two things. If Carlyle means that these two faculties are the same, he is wrong; the mensurative faculty has no more to do with logic than the poetic faculty has. Poetry must conform to the rules of logic, if it is to have a serious meaning, and so must measurement; but that is all either has to do with logic." Again, of Sir Oliver Lodge's incursions into theology there is a verse ending:

> "Sir Noll doth think consignment to a place infernal
> Too harsh,—yet some would deem a punishment eternal
> Too short for writing nonsense in the 'Hibbert Journal.'"

Mr. Jourdain's classification of people, in another article, into Blue and Pink—which is obvious once it is realized that Mr. Bernard Shaw is blue, while Miss Marie Corelli and most curates are indelibly pink—is related in idea to his "Dictionary of Received Opinions": for the use of blue people who find it a tactical necessity to learn the language of the pink.

Mr. Jourdain did not confine his witticisms to the point of his pen; his conversation was always well spiced with good things. I remember his hurling the following well-barbed parable at the head of an apostle of Do It Now. "This morning," he began blandly, "I had an amusing conversation with a bluebottle fly. It was buzzing ex-

citedly against the window-pane of my study, and trying to get out. At last, distracted by the noise, I looked up from my work and said, 'What's all this silly row about?' Turning a flushed and angry countenance toward me, the bluebottle replied, 'It's all very well for you logicians, sitting comfortably in your chairs, to talk; but *in times like the present it's Action we want, not thought.*'"

Of Mr. Jourdain's further literary work mention should be made of his delightful *Fairies' Calendar*; his realistic *Dorset Stories*; and his *Cynical Ballads*. Of the latter I cannot resist quoting "The Good Old Times":

"When I was young, said Mr. Bung,
The towns were all countree;
Now, more's the pity, London city
Ain't what it used to be.

There was a fair in Leicester Square,
The rose grew and the lily,
And meadow-sweet in Regent Street
And rustic Piccadilly.

They shot the quail in Maida Vale,
Grew corn and oil and wine,
And barley too near Waterloo;
Trout in the Serpentine.

When harvesting, we lads would sing,
And cast the sheepish eye,
Then merry blades, we'd kiss the maids
That came from Peckham Rye.

Then everybody, helped by toddy,
Was full of wit and gaiety,
And parsons grave would then behave
Exactly like the laity.

Our stock of ale would never fail,—
It stood about in tubs,—
While the Lord Mayor in Berkeley Square
Kept half-a-dozen pubs.

And treat was stood in drink and food,
By gen'rous gents like you....;
'....Well, since you press me sir, why, bless me,
I don't mind if I do!'"

Enough has been said of this side of Mr. Jourdain's activities to make it clear that, besides carving out for himself a world-wide reputation as a scholar, his wit and geniality made him quite a figure in Cambridge life both during his student days and after his return thither in 1911. To his cottage in Girton village came not only eminent mathematicians of all countries but also the contemporary undergraduate. It was here that Mr. Jourdain met Miss Laura Insull, the youngest daughter of the Rev. Walter Insull, whom he married in 1915. In this year Mr. Jourdain finally left Cambridge and spent his very happy married life at Fleet in Hampshire.

Though he was unable to travel, Mr. Jourdain made his influence felt in every part of the world. His extensive correspondence with learned men bears witness to this. Moreover, his work has had well-marked effects in several fields of thought. Not only by his own original contributions, but also by his power of clear exposition of the work of others, he has influenced the development of mathematical logic. Again, a large part of the movement toward a more orderly and systematic organization of the contributions of all nations to the advancement of science is due to his forcible advocacy. Another movement in which his influence is clearly traceable is that toward an alliance between historians and scientists. It has long enough been realized that political history has overshadowed all other aspects of man. The task of creating a general history of civilization and of its basis in scientific advance has not yet, however, received its due share of attention. So long as existing histories of science were mere matters of trivial biographical detail, the value of this new line of work was little recognized. But Mr. Jourdain helped to show that a true history of *scientific conceptions themselves*—and not of particular accidents concerning them—was possible, and desirable from the point of view of both history and science.

He was thus able to exert a definite influence upon the growing movement toward such a history.

It remains to be said that Mr. Jourdain's death came at a moment when he was at the height of his power. He had just claimed to have discovered a proof, which if valid is of the very first importance in mathematical logic, that any aggregate can be well-ordered; he was publishing in *Mind* important papers on "Causality, Induction and Probability," of which only the first is completed; he was engaged on a monumental work on *The History of Mathematical Thought*; and he was working at the great project of the issue of a National Edition of Newton. His untimely death carries with it, therefore, a sense of loss which is more than a personal one. Yet there is something of comfort, to all his friends, to know that this brave soul died—as he would have wished to die—in the full tide of his life-work.

Mr. Jourdain's Articles in "The Monist" (1908-1920).

1908:	XVIII, p. 217.	On Some Points in the Foundation of Mathematical Physics.
1910:	XX, p. 93.	Transfinite Numbers and the Principles of Mathematics.
	XX, p. 134.	A Mathematical Paradox.
1911:	XXI, p. 564.	Some Modern Advances in Logic.
1912:	XXII, p. 149.	Mr. Bertrand Russell's First Work on the Principles of Mathematics.
	XXII, p. 285.	The Principle of Least Action.
	XXII, p. 414.	Maupertuis and the Principle of Least Action.
	XXII, p. 611.	Henri Poincaré.
1913:	XXIII, p. 145.	A Correction and Some Remarks.
	XXIII, p. 277.	The Nature and Validity of the Principle of Least Action.

	XXIII, p. 353.	Robert Hooke as a Precursor of Newton.
1914:	XXIV, p. 134.	The Economy of Thought.
	XXIV, p. 188.	The Principles of Mechanics with Newton (1666-1679).
	XXIV, p. 515.	The Principles of Mechanics with Newton (1679-1687).
1915:	XXV, p. 79.	Newton's Hypotheses of Ether and Gravitation from 1672 to 1679.
	XXV, p. 140.	The Purely Ordinal Conceptions of Mathematics and Their Significance for Mathematical Physics.
	XXV, p. 234.	Newton's Hypotheses of Ether and Gravitation from 1679 to 1693.
	XXV, p. 418.	Newton's Hypotheses of Ether and Gravitation from 1693 to 1726.
	XXV, p. 633.	Mathematicians and Philosophers.
1916:	XXVI, p. 24.	The Philosophy of Mr. B*rtr*nd R*ss*ll.
	XXVI, p. 415.	Richard Dedekind.
	XXVI, p. 504.	The Logical Work of Leibniz.
1917:	XXVII, p. 142.	Existents and Entities.
	XXVII, p. 460.	Logic and Psychology.
1918:	XXVIII, p. 629.	Galileo and Newton.
1919:	XXIX, p. 450.	The Logical Significance of Ockham's Razor.
	XXIX, p. 453.	Cause and Effect.
	XXIX, p. 547.	Indefinables and Indemonstrables in Mathematics and Theology.
1920:	XXX, p. 19.	The Analytical Treatment of Newton's Problem.
	XXX, p. 183.	Elliptic Orbits and the Growth of the Third Law with Newton.
	XXX, p. 199.	Newton's Theorems on the Attraction of Spheres.